

Application No. 10/816,007

Response to Office Action of February 17, 2005

REMARKS

In the Office Action of February 17, 2005, claims 1-25 stand rejected. In this response claims 1, 8, 16 and 21 are amended. Reconsideration and allowance of all pending claims are respectfully requested in view of the following remarks. No new subject matter is being added by this response.

I. CLAIM OBJECTIONS

Claims 1-25 are objected for the use of the word weight instead of the word mass. This has been corrected.

II. REJECTION UNDER 35 U.S.C. §103

To establish a prima facie case of obviousness under 35 U.S.C. § 103, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Third, the cited prior art reference must teach or suggest all of the claim limitations. Furthermore, the suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based upon the Applicants' disclosure. A failure to meet any one of these criteria is a failure to establish a prima facie case of obviousness. MPEP §2143.

Claims 1-25 stand rejected under 35 U.S.C. § 103(a) as unpatentable over *Davis* in view of *Jones* and/or *Kawamata*. The Examiner argues that *Davis* discloses a damper and isolator except for a discussion of effective fluid mass and using the effective fluid mass as a tunable parameter and the adjustment of the passages to tune the damper. The Examiner argues that the tuning of fluid mounts is well known. Also, the Examiner argues that *Jones* and *Kawamata* teach a fluid inertial effect.

However, the Examiner's combination of the art is based on hindsight reconstruction. This is because there is no disclosure, teaching or suggestion in *Davis* to add either *Jones* or *Kawamata*. The argument of the Examiner is that it would be obvious to adjust one of the well known variable parameters in the device of *Davis* to achieve a damper that uses fluid inertia.

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While it may be desirable to make such a change, mere desirability is not sufficient to establish obviousness. *Davis* must teach or suggest the proposed combination. However, there is no teaching or suggestion in *Davis* to add a fourth tunable parameter based on an effective fluid mass. Indeed, *Davis* attempts to minimize damping effects beyond those of the first three parameters. As disclosed by *Davis* "the resistance to flow through the secondary fluid path is made small as compared to the primary damping annulus to minimize damping by such secondary fluid path." (column 7, lines 1-5 of *Davis*). In addition, there is no recognition in *Davis* that a fourth parameter can be derived from the system of *Davis*, especially a fourth parameter that uses the fluid in the annular damping region. *Davis* notes that the usefulness of this region is to provide the damper term C_A . Thus, contrary to the Examiner's assertion, there are no "well-known" parameters in *Davis* that can be simply adjusted to yield the present invention. Without a disclosure, teaching or suggestion to make the proposed combination, the rejections based on the combinations must be withdrawn.

Claim 1 as amended, recites, in part, "wherein the ratio of the cross sectional area of the first fluid containment chamber and the second fluid containment chamber to the cross sectional area of the annular damping path is chosen to produce an effective mass of the fluid to enhance vibration damping and isolation." As the Examiner points out, this limitation is not found in *Davis*. The addition of *Jones* fails to disclose, teach or suggest an effective mass. A fluid "slug" is simply an amount of fluid in part of *Jones*. Additionally, nowhere in *Jones* is the ratio of the cross sectional area of a first and second fluid containment chamber and the annular damping path disclosed. For at least these reasons, the *Davis/Jones* combination fails to render claim 1 obvious.

Kawamata does mention the determination of an effective fluid mass. However, in *Kawamata* the fluid mass is caused by a discharge tube that feeds two fluid containers. Thus the *Kawamata* does not show a damping system "wherein the ratio of the cross sectional area of the first fluid containment chamber and the second fluid containment chamber to the cross sectional area of the annular damping path is chosen to produce an effective mass of the fluid to enhance vibration damping and isolation."

For at least these reasons, claim 1 is in condition for allowance.

Considering claim 2, neither the *Davis/Jones* combination nor the *Davis/Kawamata* combination discloses, teaches or suggests "whenever the cross sectional area of the damping

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path can be changed to permit active tuning of the effective mass of the fluid.” For at least this reason, claim 2 is in condition for allowance.

Considering claim 3, neither the *Davis/Jones* combination or the *Davis/Kawamata* combination discloses, teaches or suggests “wherein the cross sectional area of the first fluid containment chamber or the second fluid containment chamber can be varied to permit active tuning of the effective mass of the fluid.” For at least this reason, claim 3 is in condition for allowance.

Considering claim 5, neither the *Davis/Jones* combination nor the *Davis/Kawamata* combination discloses, teaches or suggests, “wherein the true mass of the fluid is less than the mass of the payload and the effective mass of the fluid is greater than or equal to the mass of the payload”. None of the cited references, either alone or in combination, disclose, teach or suggest basing the effective mass on the payload mass. For at least this reason, claim 5 is in condition for allowance.

Considering claim 6, neither the *Davis/Jones* combination nor the *Davis/Kawamata* combination discloses, teaches or suggests, “wherein the effective fluid mass of the fluid is chosen to give the apparatus a roll-off of -60dB per decade for at least one decade after a significant resonance.” *Jones* and *Kawamata* do not disclose a roll off. In *Davis*, the roll off for a three parameter system is about -40dB per decade. This can be observed in Fig. 1C of *Davis*. In Fig. 1C, line 210 is a line for a three parameter system. At 10 Hz the transmissibility is a little more than about -30 dB. At 100 Hz the transmissibility is about -70 dB. Thus, for one decade (10^1 to 10^2 Hz), the change in the transmissibility, or roll-off, is -40 dB. For at this reason, claim 6 is in condition for allowance.

Claims 2-7 depend from allowable claim 1. Therefore, claims 2-7 are in condition for allowance.

Considering claim 8, as discussed in conjunction with claim 1, neither the *Davis/Jones* combination or the *Davis/Kawamata* combination discloses, teaches or suggests “an effective fluid mass, the effective fluid mass based on a ratio of a cross sectional area of a first fluid containment chamber and a second fluid containment chamber to a cross sectional area of an annular damping path.” For at least this reason, claim 8 is in condition for allowance.

Considering claim 10, as discussed in conjunction with claim 5, neither the *Davis/Jones* combination nor the *Davis/Kawamata* combination discloses, teaches or suggests, “wherein the

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true fluid mass is less than a mass of a payload coupled to the isolator and the effective mass is equal to or greater than the mass of the payload." None of the cited references disclose basing the effective mass based on the payload mass. For at least this reason, claim 10 is in condition for allowance.

Considering claim 15, neither the *Davis/Jones* combination nor the *Davis/Kawamata* combination discloses, teaches or suggests, "wherein the effective fluid mass of the fluid is chosen to give the apparatus a roll-off of -60dB per decade for at least one decade after a significant resonance." As discussed in conjunction with claim 6, *Jones* and *Kawamata* do not disclose a roll off. In *Davis*, the roll off for a three parameter system is about -40 dB per decade. Thus, claim 15 is in condition for allowance.

Claims 9-15 depend from allowable claim 8. For at least this reason, claims 9-15 are in condition for allowance.

Considering claim 16, claim 16 recites, in part, "wherein the ratio of a cross sectional area of the primary isolations means to a cross sectional area of the damping path are chosen to provide a fluid mass effect, the fluid mass effect determined by an effective mass of the fluid, the effective mass of the fluid greater than a true fluid mass." This is similar to the limitation discussed previously in conjunction with claim 1 and claim 8. As the Examiner points out, this limitation is not found in *Davis*. Therefore, claim 16 is in condition for allowance.

Considering claim 17, neither the *Davis/Jones* combination nor the *Davis/Kawamata* combination discloses, teaches or suggests "wherein the ratio of a cross sectional area of the primary isolations means to a cross sectional area of the damping path are chosen to provide a fluid mass effect, the fluid mass effect determined by an effective mass of the fluid, the effective mass of the fluid greater than a true fluid." For at least this reason, claim 17 is in condition for allowance.

Considering claim 18, neither the *Davis/Jones* combination nor the *Davis/Kawamata* combination discloses, teaches or suggests "wherein the cross sectional area of the damping path can be changed to permit active tuning of the fluid mass effect." This limitation was discussed earlier in conjunction with claim 3. For at least this reason, claim 18 is in condition for allowance.

Considering claim 19, neither the *Davis/Jones* combination nor the *Davis/Kawamata* combination discloses, teaches or suggests, "wherein the true mass of the fluid is less than the

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mass of the payload and the effective mass of the fluid is greater than or equal to the mass of the payload". None of the cited referenced disclosures basing the effective mass based on payload mass. For at least this reason, claim 19 is in condition for allowance.

Considering claim 20, neither the *Davis/Jones* combination nor the *Davis/Kawamata* combination discloses, teaches or suggests, "wherein the fluid mass effect is chosen to give the apparatus a roll-off of -60dB per decade for at least one decade after a significant resonance." *Jones* and *Kawamata* do not disclose a roll off. In *Davis*, the roll off for a three parameter system is about -40dB per decade. This was discussed previously in conjunction with FIG. 6. For at least this reason, claim 20 is in condition for allowance.

Claims 17-20 depend from allowable claim 16. For at least this reason, claims 17-20 are in condition for allowance

Considering claim 21, neither the *Davis/Jones* combination nor the *Davis/Kawamata* combination discloses, teaches or suggests, "an effective fluid mass, the effective fluid mass based on a ratio of a cross sectional area of a first fluid containment chamber and a second fluid containment chamber to a cross sectional area of an annular damping path." This limitation was discussed in conjunction with claim 8. For at least this reason, claim 21 is in condition for allowance.

Claims 22-25 depend from allowable claim 21. For at least this reason, claims 22-25 are in condition for allowance.

The allowability of these claims, especially the dependant claims were argued in the first office action. However, the Examiner did not respond specifically to these arguments. Instead, the Examiner makes the broad statement that "Regarding the rest of the claims these requirements are met in view of the explanation given above and due to the strong similarities of the instant application with the *Davis* patent." Indeed, in the first Office Actions, the rejections of the dependant claims are never specifically mentioned. This omnibus type of rejection leaves the applicant without any guidance as how to proceed in prosecuting the examination.

In order to advance the prosecution of the art, the applicants request examination of all pending claims. Additionally, since the Examiner never specifically addressed the arguments from the first response, the Applicants request that the finality of this office action be removed and another office action addressing the merits of the Applicants' responses be issued.


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III. CONCLUSION

For the foregoing reasons, the present application is believed to be in condition for allowance and favorable action is respectfully requested. The Examiner is invited to telephone the undersigned at the telephone number listed below if it would in any way advance prosecution of this case.

Respectfully submitted,
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Dated: May 17, 2005

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